



BANK OF ENGLAND

# Speech

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## Pass-through of Bank Rate to household interest rates

Speech given by

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In using monetary policy to achieve the inflation target, the MPC's primary tool is Bank Rate, which acts as the anchor for sterling overnight interest rates. Changes in Bank Rate influence the interest rates facing households and businesses, as well as the exchange rate and other asset prices, and hence shape the economic outlook. However, in the current tightening cycle, a key part of this monetary transmission mechanism – the effect on household deposit and lending rates – seems to be much less effective than usual. In this speech, I want to discuss a few possible reasons for this, whether it is likely to continue, and some implications for monetary policy.

### **Pass-through has been unusually low**

Let me start by outlining the issue.

Since late 2017, the MPC has increased the policy rate by 50bp, in two 25bp steps. Consistent with MPC guidance, the rise in the policy rate has been gradual and limited.<sup>1</sup>

Market rates have moved up roughly in line with the policy rate. For example, compared to three months before the first hike (ie August 2017), three-month interbank rates are up by slightly more than Bank Rate (about 60bp), 2-year swap rates have risen about the same amount as Bank Rate, and 5-year swap rates have risen a little less (about 40bp). This is broadly similar to trends in prior MPC hiking cycles.

However, pass-through to retail interest rates – both deposit rates and lending rates – has been unusually small. Many household interest rates have barely changed.

- Since three months before the first rate hike, the average interest rate on household (interest-bearing) sight deposits is up by just 14bp, roughly 30% of the rise in Bank Rate. By contrast, in the equivalent period of prior MPC tightening cycles, sight deposit rates rose almost as much as Bank Rate, with average pass-through of more than 80% (and minimum pass-through of over 60%).<sup>2</sup>
- It is a similar story for rates on new household time deposits: a rise of 15bp so far (roughly 30% of the rise in Bank Rate), versus average pass-through of just above 100% in prior MPC hiking cycles.
- Pass-through has been slightly greater for corporate sight deposits (which fell further during MPC easing), but still below prior tightening cycles. The weighted average interest rate on all household and private non-financial corporations (PNFC) sight and new time deposits has risen by 17bp, implying pass-through of roughly 35% versus around 100% on average in prior tightening cycles.<sup>3</sup>
- The average rate on new mortgages (covering both fixed and variable rate loans) is up by only

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<sup>1</sup> Bank Rate rose by an average of 120bp over the first 12 months of prior MPC hiking cycles (1997-98, 1999-2000, 2003-04, 2007-08).

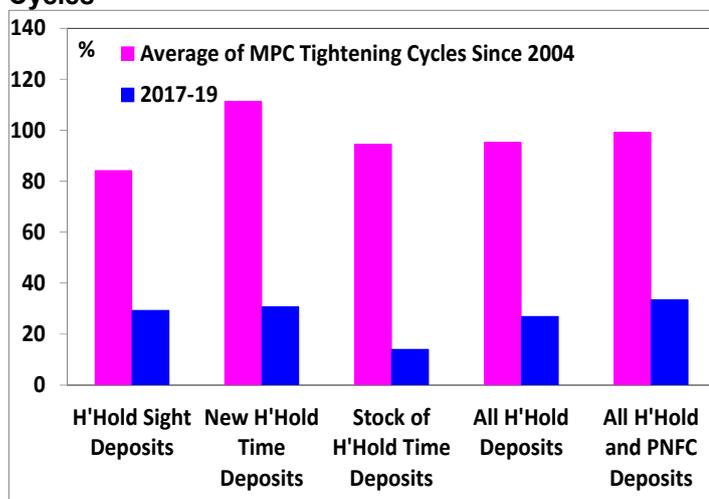
<sup>2</sup> These figures are based on the BoE effective rates series, which are weighted to reflect the overall market. Using the BoE quoted rates series, pass-through to deposit rates in this cycle has been slightly higher, around 40%. However, those series do not extend far enough back to produce comparable figures for prior tightening cycles. Moreover, as noted in FCA (2018), banks tend to reduce interest rates as accounts age, and hence the quoted rates data may not properly represent the extent of pass-through to all sight deposits.

<sup>3</sup> This calculation excludes non-interest bearing sight deposits. Including these, the average rate on household and PNFC deposits has risen by just 14bp.

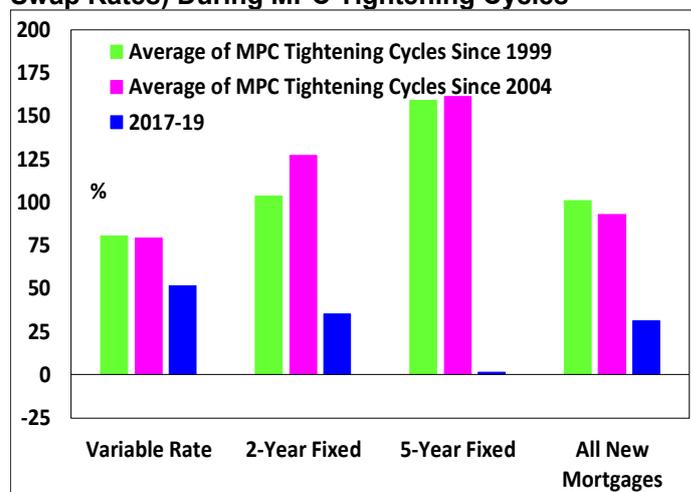
10-15bp, roughly 30% of the rise in the appropriate mix of Bank Rate and swap rates. By contrast, in previous tightening cycles, the average level of mortgage rates moved up roughly in line with Bank Rate and swap rates. Indeed, for 2-year fixed rate 95% LTV mortgages, spreads have compressed so much that – unprecedentedly – lending rates have actually fallen by over 80bp while the policy rate has been rising.

- Pass-through also has been relatively low for interest rates on consumer unsecured loans and new loans to companies.<sup>4</sup>

**Figure 1. UK – Pass-Through to Selected Deposit Rates from Changes in Bank Rate During MPC Tightening Cycles**



**Figure 2. UK – Pass-Through to Selected New Mortgage Rates from Changes in Bank Rate (and Swap Rates) During MPC Tightening Cycles**



Note: Both charts show the changes in household interest rates as a percentage of the change in riskless rates (Bank Rate or swaps) from three months before the first rate hike to an average of 12-14 months after the first hike. In the right chart, the series for 2-year, 5-year and all new mortgages are weighted averages of the rates on 75% and 90/95% LTV mortgages. Source: Bank of England.

### Deposit rate renormalisation

The relative insensitivity of deposit rates is probably best viewed as the renormalisation of the spread between deposit rates and the policy rate as the policy rate moves away from the effective lower bound.<sup>5</sup>

Deposit rates usually sit below the BoE's policy rate, with this spread reflecting among other things banks' wholesale funding costs, their operational costs, competitive pressures, and the relative supply of deposits and demand for credit.<sup>6</sup> For example, in 2000-07, household sight deposit rates on average were about

<sup>4</sup> The pass-through to PNFC borrowing rates from the increases in Bank Rate since late-2017 has been below 50% for both fixed and floating rate loans, versus average pass-through of just above 100% in prior MPC tightening cycles. Interest rates on household unsecured lending are typically less sensitive to changes in Bank Rate. They have edged up recently, but have actually fallen slightly since Q3-2017, the quarter before the first rise in Bank Rate.

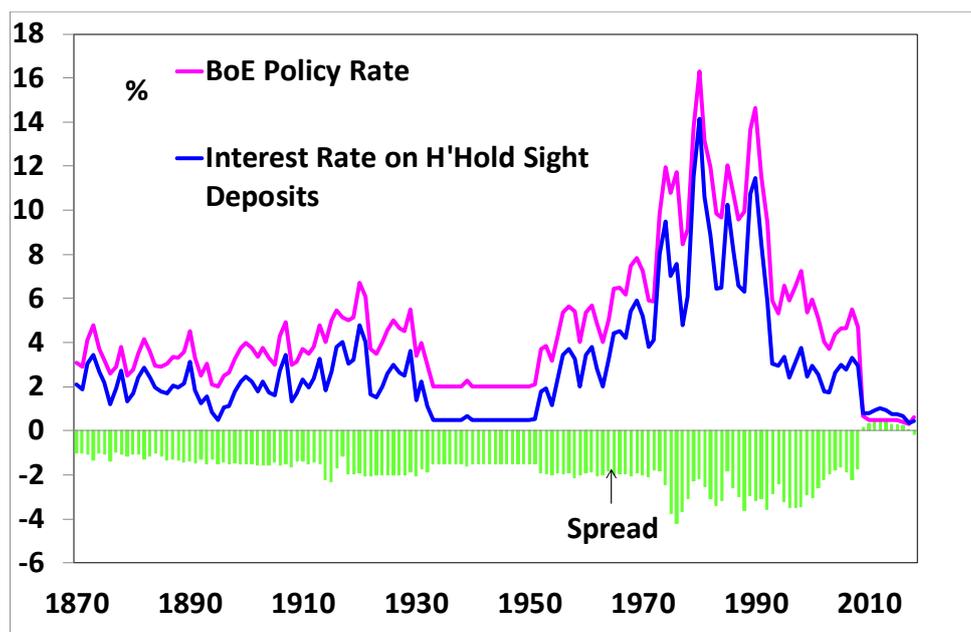
<sup>5</sup> This issue has been previously highlighted by MPC members. See for example Shafik (2016), the *Inflation Report* press conferences of August and November 2018, and pages 9-10 of the November 2018 *Inflation Report*.

<sup>6</sup> There is an extensive literature on factors that can affect interest rate pass-through. See for example de Bondt (2002), Hofmann and Mizen (2004), Kwapiil and Scharler (2006), van Leuvensteijn *et al* (2013), Gigineishvili (2011), ECB (2017), Hsu (2017), Siakoulis *et al* (2018), Heider, Saidi and Schepens (2018).

220bp below Bank Rate, with a range of 150bp to 330bp. The picture is much the same over a longer period.<sup>7</sup> Time deposit rates usually exceed sight deposit rates, reflecting an illiquidity premium and at times an upward sloping yield curve, and on average were 40bp below Bank Rate during 2000-07. With similar trends in PNFCs interest rates, the overall weighted average interest rate on household and PNFC deposits during 2000-07 was roughly 135bp below the policy rate. The picture was broadly similar in the euro area as a whole, with some variation between countries.<sup>8</sup>

As the policy rate in the UK fell close to zero in 2009, banks were understandably reluctant to impose significantly negative interest rates on deposits, and so household deposit rates fell less than the policy rate.<sup>9</sup> This effect was exacerbated in 2011-12 by the market-based rise in banks' wholesale funding costs, which caused banks to bid more aggressively for deposits. But even when that faded, the very low policy rate created interest rate congestion, with sight deposit rates in 2013-16 remaining slightly above the policy rate – something never previously seen on a sustained basis.

**Figure 3. UK – BoE Policy Rate and Average Interest Rate on Household Sight Deposits, Annual Averages, 1870-2018**



Source: Bank of England Millennium database, updated for 2017 and 2018.

<sup>7</sup> Figures from the BoE Millennium database show that over the whole period since 1870, using annual average data, the interest rate on household sight deposits on average was 180bp below the BoE policy rate. Until the last few years, the sight deposit rate has never been above the policy rate. The closest the two series got was in 1877 and 1884, with sight deposit rates 100bp below the policy rate.

<sup>8</sup> Over 2000-07, the average interest rate on sight deposits in the euro area was 210bp below the policy rate, with the average rate on deposits with a notice period up to 3 months 100bp below the policy rate. Sight deposit rates were at least 160bp below the ECB policy rate on average in every EA country over that period. Kok Sørensen and Werner (2006) discuss the variation across EA countries.

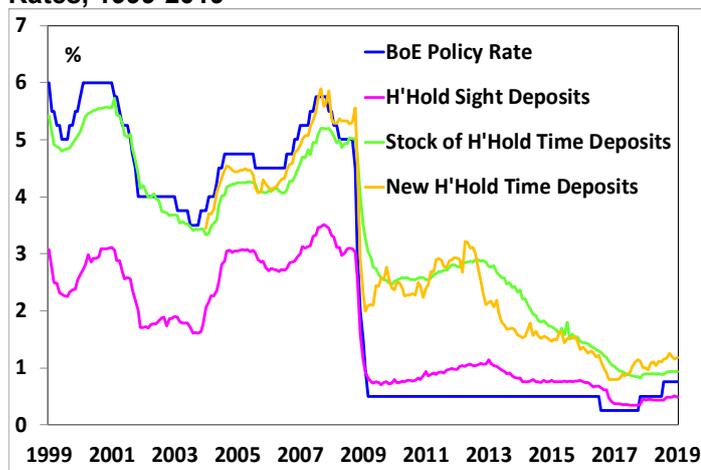
<sup>9</sup> See minutes of MPC meeting of February 2009. The issue that negative rates on deposits might lead to a substantial withdrawal of deposits in favour of cash is covered in Bean (2013).

More recently, this congestion has unwound a bit as the policy rate has risen. Deposit rates have risen much less than one for one with the policy rate, and the spreads between deposit rates and the policy rate are returning towards 'normal'.

In some countries, there is evidence that pass-through from policy rates to household deposit and lending rates tends to be asymmetric with, for example, slower pass-through to deposit rates on the way up than on the way down (or faster pass-through to lending rates on the way up).<sup>10</sup> This disparity is not so evident in the UK, other than when deposit rates were constrained by an effective floor close to zero. And in any case, the issue is that pass-through in this cycle has been slower than prior rate rise cycles.

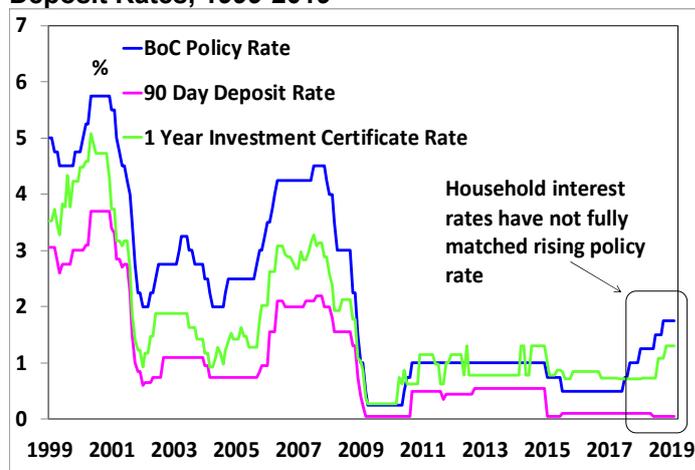
I don't think this decline in pass-through is a sign that the household deposit market has become structurally less competitive than it used to be: pass-through also has been relatively low for companies' sight deposit rates. And this is not unique to the UK. This compression of household interest rates as the policy rate fell close to zero occurred in various other countries, including the EA, Sweden, the US and Canada. Household interest rates have also been fairly insensitive to policy rate increases so far in Canada, the US and Czech Republic, where central bank rate hikes started earlier and have gone further than in the UK.<sup>11</sup>

**Figure 4. UK – Policy Rate and Household Deposit Rates, 1999-2019**



Sources: Eikon from Refinitiv and Bank of England.

**Figure 5. Canada – Policy Rate and Household Deposit Rates, 1999-2019**



In the UK, this normalisation of the spread between deposit rates and the policy rate is probably not over. If the policy rate continues to edge up in the next year or two, it would not be surprising if pass-through to deposit rates remains relatively low. For example, the average rate on interest bearing household sight deposits (around 50bp) is currently only about 25bp below Bank Rate, far less than the 220bp average spread in the precrisis period (and the 180bp average spread since 1870). Moreover, and this is a point I

<sup>10</sup> See Valadkhani and Anwar (2012), Driscoll and Judson (2013), and Popiel (2016).

<sup>11</sup> See Anderson *et al* (2017), Pašaličová (2018), and King and Yu (2018). See also Chart A on page V of August 2016 *Inflation Report*.

shall return to later on, banks in aggregate have ample deposit funding at present. To be sure, it is possible that the expansion of new deposit-taking institutions will lift interest rates for savers. But even if, as an illustration, we assume that the equilibrium spread between household sight deposit rates and the policy rate in coming years will be about 150bp – the smallest spread seen in 2000-07 – then sight deposit rates (currently 0.5% on average) would only start to rise in a significant way if the policy rate goes above 2% or so. Time deposit rates would probably be less constrained. But about 70% of household bank deposits (and 80% of PNFC deposits) are sight deposits rather than time deposits. Hence, if pass-through to sight deposit rates is low then pass-through to the overall average deposit rate would also be limited.

### **Why have lending rates not responded fully to a rising policy rate?**

Let me turn to lending rates. As noted, pass-through has been relatively low for a range of lending rates. But, given their importance to the economy, I am going to focus here on mortgage rates.

Viewed against traditional metrics, this relative insensitivity of interest rates on new mortgages to a rising policy rate might seem unsustainable, with spreads appearing to be well below equilibrium. The way that banks price new loans to reflect costs and risks has always involved some judgement, but Figure 6 shows a stylised illustration of the traditional approach. The anchor is the policy rate (or swap rates for longer-term lending rates), plus the banks' funding spread. Historically, banks have tended to use unsecured wholesale funding as the main measure of the marginal funding cost.<sup>12</sup> This is partly because it is a market in which it is possible to raise a large amount of funds relatively quickly and the cost is readily observable. These costs, plus liquidity costs, typically form the internal funds transfer price (FTP) set by the banks' treasury functions, which is charged to business units that originate new loans (or 'remunerates' business units that raise deposits). The business unit then allocates extra layers to reflect admin costs, other balance sheet costs, and profit margin.

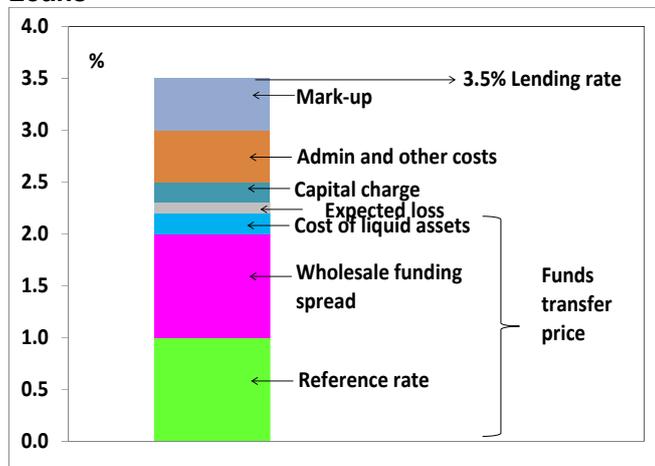
On average since 2004, new mortgage spreads have been 130-140bp above unsecured wholesale funding spreads (both against the relevant mix of riskless rates). However, with mortgage rates rising less than the policy rate (and swap rates), mortgage spreads (over riskless rates) have fallen from around 140bp in mid-2017 to 100-110bp now, the lowest for over 10 years. Meanwhile, unsecured wholesale funding spreads have risen and now are actually slightly above mortgage spreads.

Hence, if this traditional framework is still valid then, if recent levels of unsecured wholesale spreads persist, you would probably expect mortgage spreads to widen sharply. This would produce a significant tightening in domestic financial conditions even if the policy rate is stable.

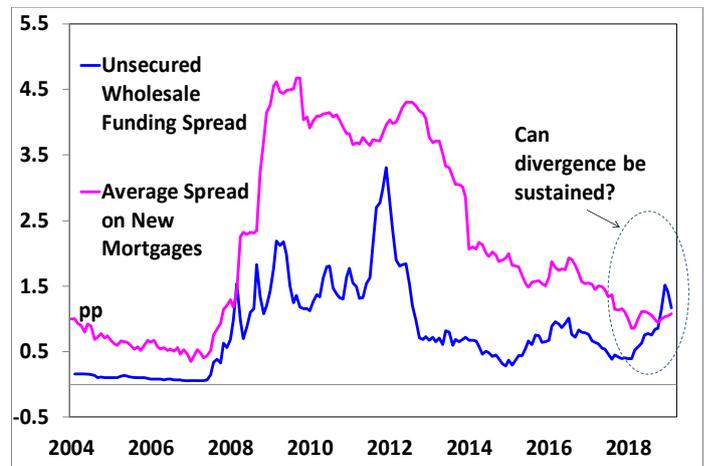
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<sup>12</sup> See Beau *et al* (2014).

**Figure 6. UK – Stylised Decomposition of Traditional Model for Setting Interest Rates on New Mortgage Loans**



**Figure 7. UK – Mortgage Spreads and Banks' Unsecured Wholesale Funding Spreads, 2004-2019**



Note: In the right chart, wholesale spreads are an average of Opco and Holdco measures, relative to Libor. Mortgage spreads are measured by a weighted average of various mortgage rates against an appropriate mix of Bank Rate and swap rates.

Source: Bank of England.

However, in my view, this assumption that lending spreads are currently far below equilibrium is questionable.

UK banks prefunded last year ahead of Brexit uncertainties and hence may not immediately need to borrow at this higher spread on unsecured wholesale funding.

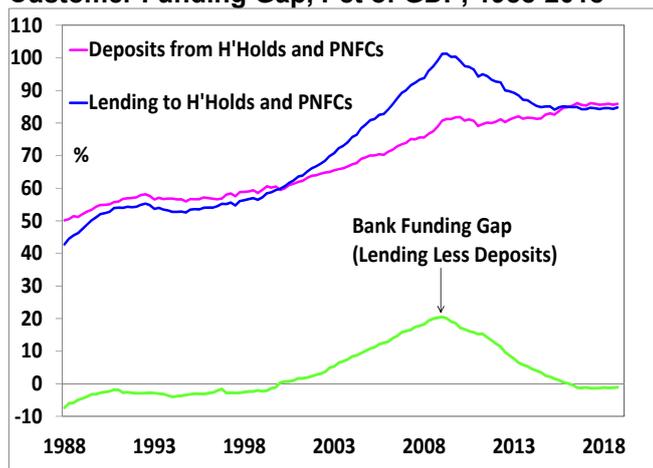
More fundamentally, as discussed in the latest *Inflation Report*,<sup>13</sup> changes in the mix of banks' liabilities mean that the traditional approach, based on unsecured funding spreads, may no longer be valid. Changes in liquidity regulation since the financial crisis have encouraged banks to have more deposits and less short-term wholesale debt. Moreover, private savings surged after the financial crisis, so that deposit growth outpaced credit growth. As a result, the major UK banks in aggregate have eliminated their customer funding gap, which peaked at over £300bn (20% of annual GDP) in 2008-09. In aggregate, mortgage lending – indeed all lending to households and PNFCs – is now largely backed by deposit liabilities rather than reliant on wholesale funding. In turn, the proportion of banks' balance sheets accounted for by wholesale funding has fallen from over 40% in 2008 to below 25% in 2017, and unsecured wholesale funding has shrunk even more sharply – with some shift to secured forms of wholesale funding (eg covered bonds).

Consistent with this shift from a wholesale-funded to retail-funded model, recent supervisory intelligence suggests that UK banks now place less emphasis on wholesale unsecured funding in their FTP models, and consider a broader range of strategic considerations in setting interest rates. For instance, among

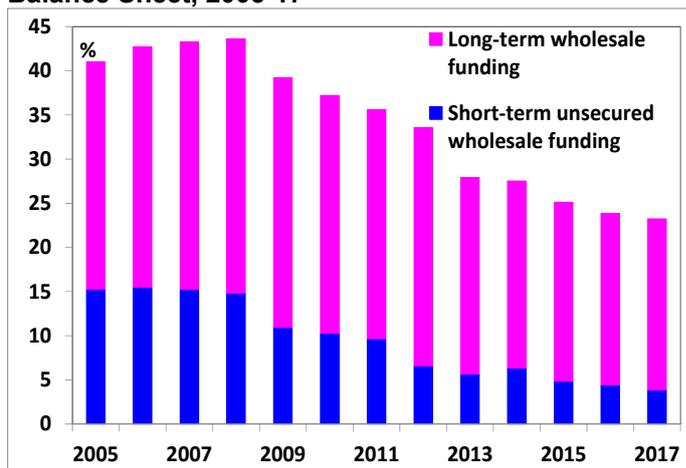
<sup>13</sup> See box 'Bank funding costs and loan pricing' on page 7 of February 2019 *Inflation Report*.

ring-fenced banks, which account for the bulk of lending to UK households and non-financial companies, most use blended funding measures reflecting wholesale secured funding (e.g. covered bonds), and unsecured funding costs, as well as fixed-rate deposits. Some lenders include sight deposits in their marginal funding cost estimate, while others take account of the cost of deposit funding through, for example, management overlays.

**Figure 8. UK – Banks’ Deposits, Lending, and Customer Funding Gap, Pct of GDP, 1988-2018**



**Figure 9. UK – Banks’ Wholesale Funding as Pct Total Balance Sheet, 2005-17**



Note: Data in left chart are break-adjusted. For the right chart (which was shown in the February 2019 *Inflation Report*), wholesale funding comprises deposits by banks, debt securities and subordinated liabilities but excludes repo. Long-term wholesale funding has residual contractual maturity of greater than three months. Balance sheet total excludes derivatives and liabilities to customers under investment and insurance contracts. Sources: Published accounts and BoE calculations.

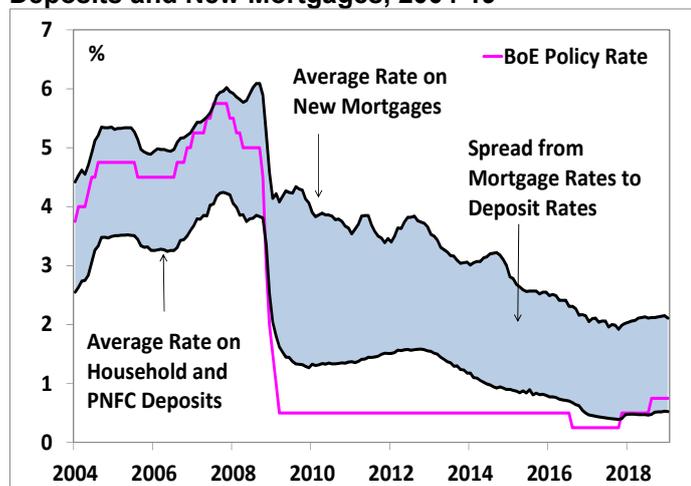
All this implies that, in estimating the equilibrium level of lending spreads, we should focus on the gap between mortgage and deposit rates at least as much as the gap from mortgages to wholesale funding costs.

Judged against deposit rates, spreads on new mortgages appear a little on the low side, but not dramatically so. Partial pass-through of a rising policy rate to deposit rates implies that partial pass-through to mortgage rates may be sustainable. For example, the spread between the average new mortgage rate (just above 2.1%) and the average interest rate on household and PNFC deposits (just above 0.5%) is around 160bp.<sup>14</sup> This proxy for net interest margins (NIMs) is only about 15bp below the average of 2004-07, and a similar amount below the average since 2013. This spread is much lower than in 2008-12. However, that was an exceptional period of severe financial strains and risk aversion, and is unlikely to be a valid benchmark for more normal times. It is probably more relevant that this spread is similar to the average of the last two years

<sup>14</sup> This is only a rough guide to trends in net interest margins on deposit-funded mortgage lending, because it does not allow for the effect of swapping fixed rate mortgages to floating rate assets.

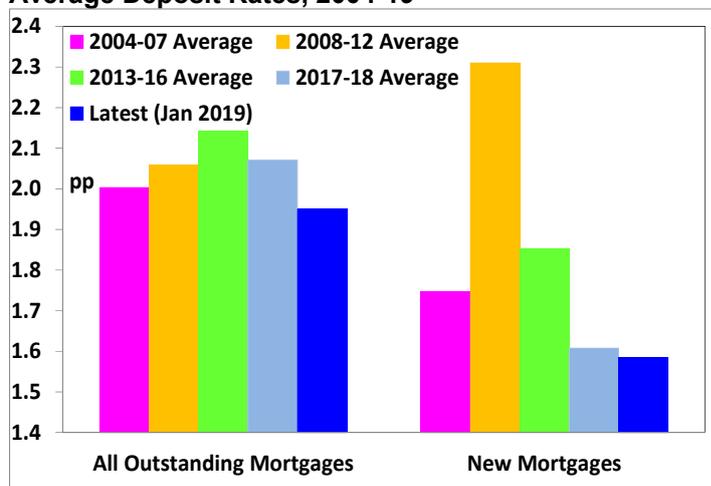
and has not changed much since the policy rate started to rise in late-2017, with mortgage rates and deposit rates both rising less than the policy rate and swap rates.

**Figure 10. UK – Average Interest Rates on Bank Deposits and New Mortgages, 2004-19**



Note: Figures use BoE effective rates data, weighted for different types of household and PNFC deposits. Source: Bank of England.

**Figure 11. UK – Spreads Between Mortgage Rates and Average Deposit Rates, 2004-19**



Of course, I would not argue that unsecured wholesale funding costs can never affect mortgage rates.

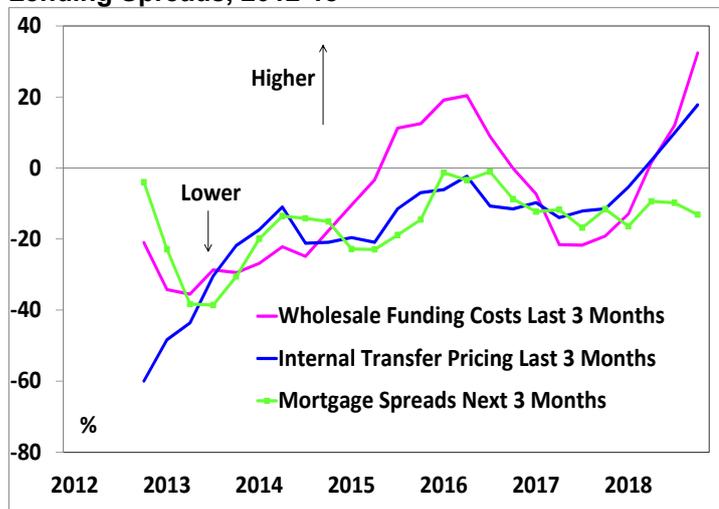
At some point, retail deposits might shift into non-deposit liabilities, while banks facing more expensive wholesale funding might bid more for deposits. This may be especially likely if wholesale funding costs are pushed up by strong credit demand (and hence a rising bank funding gap), or general competition for funds across the economy.<sup>15</sup>

But at present credit growth remains subdued. Moreover, the rise in unsecured spreads over the last year has not been mirrored in other wholesale markets (eg covered bonds). It appears to reflect some risk aversion among investors, partly Brexit-related, and changes in the resolution regime for UK banks. These factors are probably less likely to affect deposit rates.

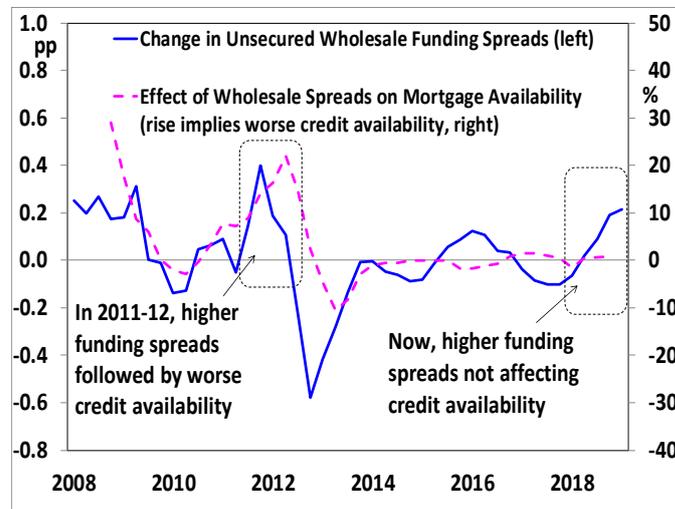
Results from the BoE *Credit Conditions Survey* are consistent with this. Even with the rise in unsecured wholesale spreads, banks expect mortgage lending spreads to fall further in coming months. Similarly, since around 2014, changes in wholesale funding spreads have not had much impact on lenders' expectations for mortgage availability. Indeed, the survey suggests that competitive pressures are likely to continue to lead to easier mortgage availability in coming months.

<sup>15</sup> Conversely, Erikson and Vestin (2019) argue (based on data for Sweden) that a negative policy rate can pull down mortgage rates by dragging wholesale funding costs below zero even if deposit rates are constrained around zero.

**Figure 12. UK – Net Balance of Banks Reporting Changes in Wholesale Funding Costs, Internal Transfer Pricing of Funds, and Expectations for Mortgage Lending Spreads, 2012-18**



**Figure 13. UK – Unsecured Wholesale Funding Spreads Have Less Effect on Mortgage Credit Availability, 2008-18**



Note: Both charts show 4-quarter averages. The series in the left chart are all net balances, as is the series for mortgage availability in the right chart. The left chart uses results from the BoE Credit Conditions and Bank Liabilities surveys, and the series on wholesale funding costs does not distinguish between secured and unsecured funding. Source: Bank of England.

### Deposit rate renormalisation likely to continue to cap lending rates

Looking ahead, a background in which the policy rate is rising gently and deposit rate pass-through is relatively low might well continue to produce only limited upward pressure on new mortgage rates.

First of all, partial pass-through to deposit rates would allow lending rates to rise less than the policy rate (or swap rates) without further eroding NIMs on new mortgages. To be sure, margins on new mortgages are already relatively low, as noted above, with a recent external estimate putting the return on equity for new mortgage lending a little below 10%.<sup>16</sup> However, the ring-fencing of major UK banks may reinforce competitive pressure among lenders and hence keep NIMs on new mortgages below historic norms.<sup>17</sup>

Moreover, NIMs on existing mortgages – which generally exceed those on new mortgages – would probably benefit from a rising policy rate. Market intelligence suggests that lenders typically swap most fixed rate mortgages into floating rate assets. Hence, the yield on these mortgages (plus tracker and SVR mortgages) moves broadly in line with Bank Rate, plus the mortgage spread at origination. So partial pass-through of a rising policy rate to deposit rates implies widening NIMs on existing mortgages (for a deposit-funded mortgage lender), given that in effect most mortgage assets are variable rate. This so-called ‘back book’

<sup>16</sup> See Sinha *et al* (2019). The November 2017 *Financial Stability Report* estimated that the cost of equity for UK banks is around 11.5% on average. Recent FSRs report that the overall return on equity for UK banks has been below 10% for about ten years.

<sup>17</sup> See page 31 of the BoE June 2018 *Financial Stability Report* and Proudman (2018).

effect would allow banks to maintain overall NIMs on the stock of mortgage lending if Bank Rate is rising gently even if NIMs on new mortgages remain somewhat below average.<sup>18</sup> Indeed, BoE staff analysis suggests that if pass-through to deposit rates remains as low as recently, and/or if Bank Rate rises faster than once per year (and mortgages are deposit-funded), then banks' aggregate net interest margins could be stable even if spreads (over riskless rates) on new mortgage loans fall further.

## Implications

Let me summarise the argument so far. Household deposit rates are unlikely to respond fully to policy rate hikes until the spread between deposit and policy rates has normalised further. With the funding gap closed, mortgage lending rates are now more sensitive to deposit rates and less sensitive to wholesale unsecured funding rates. Hence, for as long as deposit rates remain less sensitive to policy rate changes, rates on new mortgages may also respond by less than usual to changes in Bank Rate (and corresponding swap rates). The link from changes in the policy rate set by the MPC to changes in households' deposit and lending rates is not permanently broken, but is likely to be less effective while the policy rate is very low.

This has some general implications for monetary policy. Since the crisis, policymakers have had to pay more attention to the issue that there may be an effective lower bound (ELB) for the policy rate – not necessarily at zero – below which a further reduction generates no extra stimulus and may even be counter-productive.<sup>19</sup> However, as the policy rate approaches the ELB, there also may be a range in which policy rate changes have progressively less impact on banks' deposit and lending rates. Close to the ELB, a lower policy rate would be reflected mainly in wider lending spreads (over riskless rates) rather than lower mortgage rates. Conversely, a slight rise in the policy rate would produce narrower lending spreads. Lending and deposit rates would not move much either way.

This is only part of the monetary transmission mechanism (MTM). But it is a fairly important part. BoE models suggest that monetary policy in the UK operates through four main channels: the exchange rate; cost of capital and non-housing wealth; the cashflow effect on households and their willingness to bring forward or delay purchases; and a housing channel. The latter two channels rely on the pass-through of policy rate changes to household interest rates. For example, a higher policy rate pushes up mortgage rates and hence weakens housing activity and house prices, reducing the value of households' collateral (the housing channel). And the combined rise in deposit and mortgage rates squeezes consumer spending because the spending of people with a mortgage is more sensitive to interest rate changes than the spending of net savers (the cashflow channel), even if this effect is less marked than it used to be.<sup>20</sup> The Bank's suite of models suggest that these two channels typically account for between a third and two thirds of the total

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<sup>18</sup> For example, BoE staff analysis suggests that if Bank Rate rises once per year over the next three years, mortgages are backed by deposits, and pass-through to deposit rates is 60% (which is higher than recently), then the overall NIM for mortgage lenders will be stable if spreads on new mortgages (over riskless rates) are unchanged. Those results are simplified and some banks have so-called 'structural hedges' for some rate-insensitive deposits that will affect how NIMs will evolve as risk-free rates change.

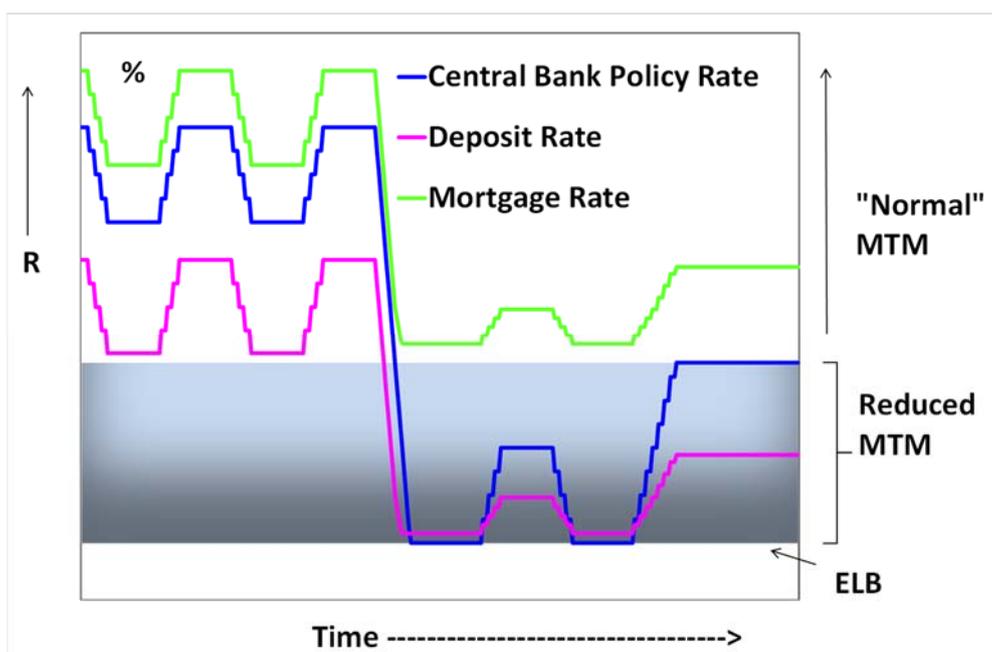
<sup>19</sup> See Carney (2016), Brunnermeier and Koby (2019), Heider, Saidi and Schepens (2018), Eggertsson *et al* (2019).

<sup>20</sup> See Panigrahi, Rigg and Rockall (2018), and Gelos *et al* (2019).

expected medium-term impact on output from policy rate changes, depending on how persistent the interest rate change is and the extent to which it is anticipated. If these channels are less effective, then the overall MTM also may be less effective than usual.

It is not possible to be precise about where the threshold for such a zone of reduced policy effectiveness might be. It probably starts when sight deposit rates reach or are close to their effective lower bound, and hence when the policy rate itself is clearly above the ELB. As a rough estimate, my guess is it that for the UK this might occur at a policy rate of roughly 2% or so, reflecting a near-zero floor for sight deposit rates plus an equilibrium spread of 150-200bp between household sight deposit rates and the policy rate.<sup>21</sup> The reduction in policy effectiveness may become more marked as the policy rate approaches the ELB and a higher share of deposit rates (eg time deposits) become constrained. Of course, this is still very uncertain and we are still learning about the effects of policy rate changes at low levels. But this issue may be a fairly regular occurrence given that the neutral policy rate is much lower than previously.<sup>22</sup>

**Figure 14. Stylised Illustration of Policy Rate, Mortgage Rates and Deposit Rates at Low Level**



Note: In the chart, the responsiveness of deposit and mortgage rates to changes in the policy rate is less while the policy rate is in the shaded area, and diminishes further in the bottom half of the shaded area. Source: Bank of England.

I stress that if the monetary transmission mechanism is less effective at a low rate level – and this is still an ‘if’ – this will not prevent the MPC from achieving the inflation target over time. The MPC could allow for this issue by adjusting monetary policy slightly more actively (when the policy rate is low) in order to produce a desired impact on the economy. For example, if Bank Rate is at, say, 1.0% and the MPC want to add

<sup>21</sup> This spread averaged 220bp in the precrisis period, with a low of 150bp.

<sup>22</sup> See box on pages 39-43 of the August 2018 *Inflation Report*.

stimulus, it would be more appropriate to cut a bit further than usual, because each 25bp change in rates would have relatively less impact on the economy. The same point applies if the MPC want to tighten policy (at a low rate level). Moreover, lower interest rates could be reinforced by balance sheet policies. For example, TFS-type programmes could increase downward pressure on lending rates even if banks' deposit rates are unchanged, while QE can provide extra stimulus if the policy rate is at the effective lower bound.<sup>23</sup>

## **The near-term outlook**

Let me finish with some brief comments on the near-term outlook for the economy and monetary policy.

For most of the period since the Brexit referendum, the economy has grown at an underlying pace of 1½%- 2% YoY, with some variation from quarter to quarter due to erratic factors such as the weather. That pace of growth is modest by historic norms but slightly above potential. Brexit uncertainties have weighed on investment, but activity was supported by the relatively loose monetary stance here and, for much of that time, solid global growth. The output gap probably closed during 2018, with a clear pick up in pay growth during that year.

However, with increased effects from Brexit uncertainties and softer global growth, the economy has recently slowed significantly. Business surveys have turned down markedly, with gloomy readings on output, orders and confidence. Despite the support from stronger real wage growth, consumer confidence has fallen below average, with a marked deterioration in consumers' expectations for the general economy.

Looking ahead, assuming we avoid a disruptive no-deal Brexit and the economy adjusts smoothly to an average of Brexit endstates, some of the current uncertainties in the UK are likely to fade. Moreover, global growth is likely to be underpinned by expectations of more accommodative monetary policies overseas. Hence, conditioned on that Brexit assumption and the fiscal measures announced late last year, UK growth will probably strengthen again, such that the economy moves into excess demand over the next year or two. In that scenario, further UK monetary tightening – limited and gradual – probably will be needed over time.

However, the possibility that monetary tightening might be needed in the future does not necessarily mean we need to tighten now. A range of alternative Brexit outcomes are possible, and these may have very different implications for the economy and monetary policy. Given that at present economic growth is probably not strong enough to create excess demand and inflation is reasonably well behaved, for now it makes sense to wait and to see how Brexit developments unfold. And as we have said before, the monetary policy response to Brexit, whatever form it takes, will not be automatic and could be in either direction. We will always act to achieve the 2% inflation target.

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<sup>23</sup> The TFS probably also helped lower the effective lower bound for the policy rate. See Carney (2016), Shafik (2016), and Ginelli Nardi *et al* (2018). See also ECB (2017) and Eisenschmidt and Smets (2018) for discussion of the effects of non-conventional policies in the euro area.

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